

# The Role of Age and Gender in the Relationship between (Attitude, Subjective Norm and Perceived Behavioural Control) and Adoption of E-Learning at Jordanian Universities

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## Abstract

The purpose of this study is to examine the moderating factors that effect on adaption e-learning among students in Jordanian universities. Two models of e-learning that are observed among adopting institutions are: E-learning as a supplement to traditional classroom model have been introduced by The respondents in this research. The paper takes a social, and technical approach in its investigation by using a research model based on the Theory of Planned Behaviour (TPB) to identify the factors that affect intention to adopt e-learning. The model identifies the age and gender as a moderator between (attitude, subjective norm, and perceived behavioural control) and Behavioural intention. stratified random sampling method was used to select students. 322 from 450 students which response (71.5%) at three public and three private universities in Jordan. Hierarchical Multiple Regression Analysis was used to assess the relationships in the constructs. The paper presents some findings on e-learning adoption intention determinants. It also discusses some of the implications of the findings on theory and practice in Education .

**Keywords:** Attitude, subjective norm, perceived behavioral control, age, gender, Behavioural intentions, e-learning, TPB.

## 1.Introduction

Information and Communication Technology (ICT) has become a major focus of interest in the educational field. There are many benefits which speak for the integration of ICT in education, such as increasing the quality of learning (Chang & Wang, 2008), providing learners with technological skills and encouraging learners to be more (van-Braak, 2001), promoting teachers and students' performance and motivation, and removing the limitations of time and space in instructional processes (Al-Zaidiyeen, Mei, & Fook, 2008; Alzamil, 2006). E-learning is determined by Khan (2005) as a groundbreaking method to provide a ingenious, learner-centred, collaborating, and smoothed learning setting for everyone, everywhere, and at any times. This can be indeed fulfilled through employing the elements and means of different digital technologies accompanied by other types of learning materials appropriate for open, dynamic, and distributed learning settings (p.3). E-learning is becoming increasingly prominent in tertiary education, with universities increasing provision and more students signing up. But is it actually changing the way universities teach and students learn, or is it simply a case of students typing up their essays on computers and professors sending them course reading lists or work assignments by e-mail (Altarawneh, 2011)

Higher education in Jordan began with the second half of the twentieth century, namely the sixties, when numerous Teachers' Colleges were established throughout the country (Altarawneh, 2011). Their establishment provided the necessary teaching manpower needed to meet the high demand on school education characterizing that era. At present, there are twelve public and thirteen private universities in Jordan. The Bachelor's degree is offered at both types, while Master's and Doctorate degrees are confined to public universities (Ministry of Higher Education and Scientific Research, 2014).

Many factors were found to influence the adoption of e-learning by students. This study attempts to identify the factors influencing the adoption of students in Jordanian universities

## 2. Literature review

It is asserted that the letter "e-" in the phrase e-learning symbolizes the term "electronic". This in practice brings up the information technologies, business, as well as every other subjects related to or communicated over the internet (e-, The American Heritage New Dictionary of Cultural Literacy, 3<sup>rd</sup> n.d.). This somewhat novel prefix is seen not only in e-learning but also in many other words, among which e-commerce, e-business, e-shopping, e-banking, e-book, e-administration, and e-mail. All in all, it denotes the diffusion of technology into the modern lives of ours.

Jay Cross devised e-learning in 1998 (Cross, 2004). Nevertheless, further words like tele-learning (Collis, 1996), telematics (Selinger & Pearson, 1999), web-based learning (Lockwood & Gooley, 2001), on-line learning (Salmon, 2000), web-based instruction and flexible learning (Khan, 2007), web-enhanced learning (Kirschner & Paas, 2001), networked collaborative e-learning (McConnell, 2004), as well as integrated e-

learning (Jochems, Merrienboer, & Koper, 2004) have been also employed to refer to the same concept. In fact, the literature on e-learning is very extensive, which makes defining the term a rather intricate task. Indeed, there is no common definition for e-learning as stated by Dublin (2003) and Oblinger and Hawkins (2005). It is emphasized by Dublin that a misconception on e-learning is that each person would understand it once you speak about e-learning; yet, it needs to be asserted that the word e-learning is associated with diverse meanings for various individuals (2003, p.2).

E-learning is a somewhat modern novelty, yet it has attracted substantial attention and research not only in education but also in other fields. Commonly, the studies dealing with e-learning have focused on two topics: studies concerned with the effect of e-learning on the educational process or its efficiency and equating it to the traditional face-to-face mode of education (Piccoli, Ahmad, & Ives, 2001; Zhang, Zhou, Briggs, & Nunamaker, 2006) and research on e-learning environment design issues including human computer interaction (HCI), usability, and design principles (Chang & Wang, 2008).

Understanding why the students and instructors adopt or reject e-learning could help us prepare a setting to be more encouraging for better adoption. It also contributes to taking measures for the sake of stimulating the acceptance (Ndubisi, 2006). Principally, by the time an up-to-the-minute system is presented, a better understanding of the elements which might influence adopting it would result in an upgrading of teaching, education, application, as well as acceptance. In the same way, to guarantee fulfilling user satisfaction and warranted moneys, it is vital to meticulously take into account the factors which influence adoption of e-learning (Vitartas, Jayne, Ellis, & Rowe, 2007).

Despite the importance of the variables associated with the individual differences in explaining the technology-related behaviours, they have not been given due attention in the technology acceptance and adoption models (Agarwal & Prasad, 1999; Sun & Zhang, 2006; Yi et al., 2005-2006). Meanwhile, only a few models have addressed the issue of how these demographics may directly influence the intentions or moderate the relationship between the intentions and other variables (Branca, 2008; Gefen & Straub, 1997; Sun & Zhang, 2006; Venkatesh & Morris, 2000). Taylor and Todd (1995) noted that the researchers have mostly taken a static view about the impact of the variables in the acceptance models. Considering how the influence of those factors may change with the inclusion of some demographics has been of less interest. Consequently, this research attempts to examine the effects of certain demographics on the links between the direct factors in the research model and BI. Based on the study of Venkatesh et al. (2003), two demographics have been hypothesised in this study so as to moderate the paths from attitude, SN and PBC to BI to adopt e-learning: gender, and age.

## 2.1 The Theory of Planned Behaviour

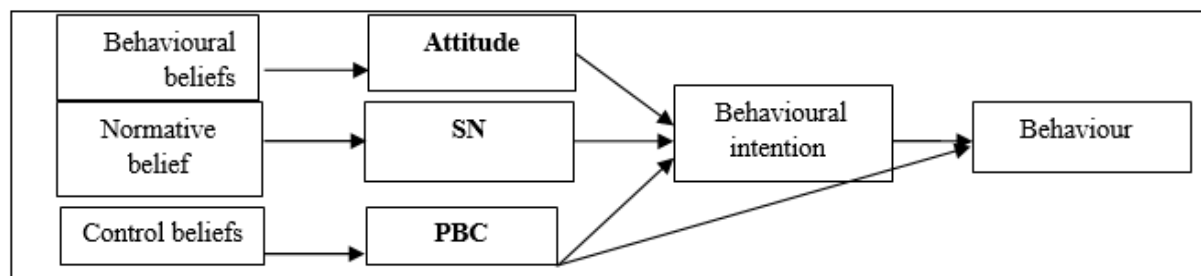
TRA applies to the behaviours which are under a volitional control. However, its predictive accuracy “diminishes when the behaviour is influenced by factors over which at least some individuals have only a limited control” (Ajzen, 1985, p. 36). Ajzen (1985) proposed the theory of Planned Behaviour (TPB) to expand TRA and permit it to predict and explain the behaviours which are not completely under the volitional control. Similar to TRA, TPB is also lends its basis to the supposition that the individuals typically conduct sensibly. They embrace the accessible information while regarding the consequences associated with their behaviours (Ajzen, 2005).

The theory hypothesises that the peoples’ intentions to accomplish a certain behaviour can be considered as the most significant immediate determining factor for that behaviour. In addition, the theory postulates that intention is a work of three rudimentary determinants; while the first is intrinsically personal, the other is a reflecting social effect, and the last is linked to the issues of control (Ajzen, 2005).

The first determinant of intention is attitude or the individual's positive or negative assessment for the accomplishment of a particular behaviour. The second determinant is SN or the person's perception of the social pressure wither to accomplish or not to accomplish a given behaviour. At last, TPB adds the construct of Perceived Behavioural Control (PBC) or the sense of self-efficacy or the capability to conduct a certain behaviour (Ajzen, 2005, p. 118).

In essence, TPB is an extension of TRA with the addition of PBC. According to TPB, people generally show a tendency to accomplish a certain behaviour once they magistrate it positively, it observe the social pressure to do it, or even once they realize they are equipped with the means and assets to accomplish it (Ajzen, 2005).

Like TRA, TPB also deduces that the comparative prominence of the three determinants depends partly on the intention of interest and that they vary across people. In other words, one determinant may explain the intention in some behaviours whereas in others two or the three determinants are equally needed. Figure 1 represents a graphical representation of the theory of Planned Behaviour.



**Figure 1: The Theory of Planned Behaviour**

TPB has proved a useful model in predicting and explaining BI from the attitude, SN, and PBC constructs across a range of behaviours. Addition of the PBC construct has significantly increased the amount of the explained variance in the intention

## 2.2 Behavioral Intention to Adopt E-Learning

Intention is a psychological construct that refers to an individual's motivation in the form of his or her conscious plan to exert effort to perform behavior (Eagly & Chaiken, 1993). The concept of intention occupies a central position in cognitive approaches to understanding human behavior (Tubbs & Ekeberg, 1991). The concept has been tackled in social psychology research since the early 1950's (Dulany, 1961; Fishbein & Ajzen, 1975). Intention has commonly been viewed as the "conative" or behavioural component of the tripartite conception of attitude (Rosenberg & Hovland, 1960). Therefore, measures of attitude and intention have often been applied interchangeably to serve as indicator of a person's attitude (Fishbein & Ajzen, 1975). This view indicates the strong association between the two concepts.

There is empirical evidence supporting the links between BI and the research proposed independent variables, namely attitudes, SN and PBC. From a broader perspective, several meta-analyses of the literature on TRA and TPB offered a good support for these links (Albarracín et al., 2001; Armitage & Conner, 2001; Godin & Kok, 1996; Hagger, Chatzisarantis & Biddle, 2002)

However, sometimes there can be discrepancies between the intentions and behaviours (Ajzen, 2005). For example, time can affect the individual's intention to carry out an action. As time elapses, the likelihood that the intentions are influenced by unforeseen events increases. Sejwacz, Ajzen and Fishbein (1980) reported a decrease in the correlation between the intentions and behaviours over a two-month period from 0.72 to 0.47 respectively. Nonetheless, there is research to support the predictive validity of the intentions over a 3-month period (Armitage, 2005). Largely, when an appropriate measure of intention is obtained, it will provide the most accurate prediction of the behaviour (Ajzen, 2005).

## 2.3 Attitude

Attitude is one of the most important concepts in social psychology (Manstead & Hewstone, 1995). Definitions of attitude have varied over time. However, much of the literature describes attitude in a single or tripartite account (Zanna & Rempel, 1988). the attitude has been frequently used to explain the human behaviours (Zimbardo, Ebbesen, & Maslach, 1977). However, numerous surveys have reported attitude as a very lowly predictor of the actual behaviour (Wicker, 1969).

Eagly and Chaiken (1993) provided the most contemporary definition of the attitude consistent with this tripartite position; attitudes are considered as inclinations to assess an object with some grade of favour or disfavor, customarily communicated in cognitive, affective and behavioural reactions". The cognitive responses refer to the beliefs, thoughts, and ideas about the attitude object. The affective component refers to the feelings, moods, and emotions that people experience in relation to the attitude objects. The behavioural or conative responses consist of the overt actions and BI that people display in relation to the attitude object (Eagly & Chaiken, 1993).

In a classical study, LaPiere (1934) investigated racial prejudice by calling upon 251 restaurants and hotels accompanying a young Chinese couple, where they were denied service only once. About six months later, the researcher sent a letter to each place visited, inquiring this question: "Will you accept members of the Chinese race as guests in your establishment?". Of the 128 places that responded, over 90% replied: "No". This inconsistency between the attitude and behaviour has raised doubts about the assumption that the attitude could be used to explain the human actions. LaPiere's study and similar research findings have triggered extensive research to re-examine the concept of attitude and its relationship with the behaviour (Ajzen & Fishbein, 1980). Among the several lines of research that have attempted to resolve the feeble link between the attitude and the behaviour is the pioneering work of Fishbein and Ajzen on the attitude (1975, 1980).

## **2.4 Subjective norms**

Rogers (2003) described the adoption process as mainly a communication process in which different forms of the social influence are involved. If an individual believes that important people believe that he or she should perform certain behaviours, they may choose to perform it even if they do not hold a positive attitude toward the behavior or its consequences (Ajzen & Fishbein, 1980). This type of social influence is termed Subjective Norm (SN) within the theoretical framework of Fishbein and Ajzen (1975). Nevertheless, the definition provided by Ajzen and Fishbein (1980) about SN seems to be less broad than the view of the norms found in the Social Psychology. Norms as discussed by sociologists refer to a broader range of permissible behaviours or common standards and rules that are not necessarily obligatory (Eagly & Chaiken, 1993).

Subjective norms refer to “the person’s perception that most people who are important to him think he should or should not perform the behaviour in question” (Fishbein & Ajzen, 1975). Subjective norms have been found to be more important prior to, or in the early stages of innovation implementation when users have limited direct experience from which to develop attitudes (Hartwick & Barki, 1994; Taylor & Todd, 1995).

## **2.5 Perceived behavioural control**

Personal insufficiencies and external impediments could inhibit the accomplishment of any behaviours (Ajzen, 2005). These factors characterize the person's actual control or dearth of control over a certain behaviour. Effective accomplishment of a behaviour depends on the persons’ control over numerous factors which might hinder it. Thus, the resources and opportunities available to an individual dictate in part the possibility of performing a particular behaviour (Ajzen, 1985; Bandura, 1986). The perceived behavioural control (PBC) was the additional construct proposed by Ajzen (1985) to cater for explaining non-volitional actions. It is demarcated as the individuals’ opinions about the ease or struggle involved in accomplishing a certain behaviour (Ajzen, 1991, p. 183). Specifically, PBC implies that the existence of constraints can hamper the intentions to perform a behaviour and its actual performance. According to Ndubisi (2004) and Taylor and Todd (1995) Perceived Behavioural Control (PBC) denotes the obstructions against using the technology. Consistent with the definition proposed for the perceived behavioural control at a previous point, the surveys about TPB (e.g., Sparks et al., 1997) have substantiated that the most significant factor is perceived difficulty, particularly because it is connected to the internal constraints. It is essential to note that it is the individuals’ perceptions of control and not the actual control that he or she has over the behaviour that is measured in TPB.

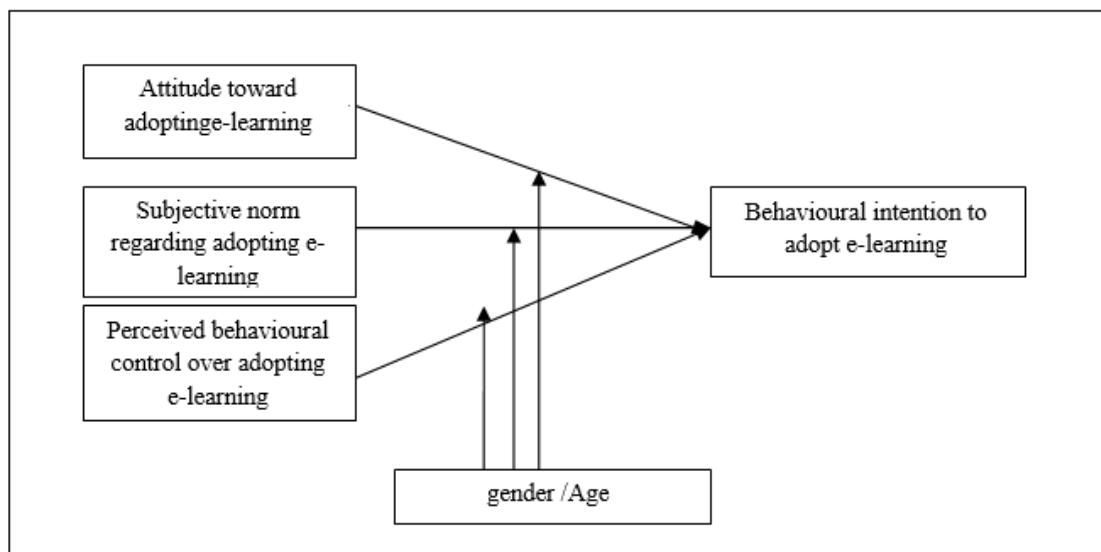
Several researchers have applied TPB to technology-related behaviours and found PBC to be a significant determinant of intention (Mathieson, 1991; Taylor & Todd, 1995). In an e-learning study, PBC was found significant in determining the intentions to adopt a Blackboard system (Ndubisi, 2006; Ndubisi & Chukwunonso, 2004).

## **2.6 Gender**

Understanding gender differences in individual technology adoption and usage decisions has been identified as a significant issue in the technology acceptance literature (Venkatesh et al., 2000). Several studies found that there are differences between males and females in their technology-related variables including adoption (Venkatesh & Morris, 2000; Venkatesh et al., 2000). Generally, the literature reports that males have more favourable attitudes towards technologies than females. Females generally experience greater computer anxiety and negative perceptions than males (Keller et al., 2007). However, other studies found no significant difference between men and women regarding perceptions and usage of IT (Leong & Saromines-Ganne, 2002).

## **2.7 Age**

Age differences have been shown to exist in technology adoption contexts (Venkatesh & Morris, 2000). It is evident that age significantly moderate the influence of the determinants on behaviour intention. For example, in accordance with the findings of Venkatesh et al. (2003), it has been found that (1) the effect of perceived usefulness on behaviour intention was moderated by age; (2) the influence of perceived ease of use on behaviour intention was moderated by age; (3) the influence of subjective norm on behaviour intention was moderated by age.



**Figure 2: Research framework**

### 3. Research design

The sample of study consists of students of three public Universities and three private universities in Jordan who have introduced to e-learning. the sampling of this study is done in accordance with regional distributions in Jordan. Jordan is divided into three regions; northern, middle, and southern regions. Three public universities will be chosen randomly from all regions as follows: Yarmouk University from the northern region, Jordan University from the middle region, and Mu'tah University from the southern region. Similarly, three private universities will be chosen randomly as follows: Jerash University from the northern region, applied University from the middle region, and Al-Zaytoonah University from the southern region. The stratified random sampling method was used in sample selection. A total of 450 students from the six universities responded to the survey, of which 322 were usable which response (71.5%). Several aspects of e-learning are explored including: behavioural intention, attitude, subjective norms, perceived behavioural control, gender, and age.

The questionnaire consists of eleven parts. The first part of the questionnaire contains 6 items for students, which mainly concerns with the demographic data for students, the demographic data include: Gender, age, internet experience, Frequency of Internet, specialization, and university.

Structured questionnaire was used in this research. Respondents were surveyed using five-part questionnaire. Parts one concerns with the demographic data for students, the demographic data include: Gender, age, internet experience, Frequency of Internet, specialization, and university, part two measure e-learning adoption intention, with items adapted from Lee (2001). Part three measures attitude towards e-learning with five items taken from Ngai et al. (2007). Part four measures the subjective norm with five items taken from Ajzen and Fishbein (1980), Taylor and Todd (1995) and Venkatesh and Davis (2000) while Perceived Behavioral Control was measured in parts five with five items from Taylor and Todd (1995a, 1995b). Demographic variables were captured in part one with single item measures. Questionnaire were measured on a five point Likert-scale anchored at 1 (strongly disagree) to 5 (strongly agree).

Hierarchical Multiple Regression Model (Abrams, 1999) was employed to predict the relationships in the construct. The predictor variables were entered into the model in different stages. The hierarchical regression is employed so that the increase in  $R^2$  corresponding to the inclusion of each category of predictor variables. The  $R^2$  for all sets can be analyzed into increments in the proportion of intention to adopt (Y) variance due to addition of each new set of predictor variables to those higher in the hierarchy. These increments in  $R^2$  are squared multiple semi partial correlation coefficients.

The moderating effects of age and gender on the Relationship between (Attitude, Subjective Norm and Perceived Behavioural Control) and behavioural intention to adopt e-learning were measured based on Baron and Kenney (1986)

### 3.1 Results and discussion

#### 3.1.1 Reliability analysis and descriptive statistics

In this research , alpha values for all dimensions exceed the .60 lower limit of acceptability (Hair et al., 2006). the alpha scores for all the sub-scales are presented in Table 1 below. The sub-scales (AT, BI, PBC, and SN) had alpha values of ( $\alpha = .89, .87, .84, .84$ , and  $.87$ ) which is regarded as high (Hinton et al., 2004). This means that items measuring the construct dimensions are reliable



**Table 1: reliability results**

Scale	No. of Items	Coefficient $\alpha$
AT	5	.89
BI	6	.87
PBC	6	.84
SN	4	.87

### 3.2 Moderating effects

The moderator variable influences the direction and/or strength of a relation between an independent or predictor variable and a dependent or criterion variable (Baron & Kenny, 1986, p.1174). In order to test the hypotheses that age, gender, and IE moderate the relationships between the three determinants of intentions and BI, the steps suggested by Baron and Kenny (1986) and Aguinis (2004) were followed. Firstly, the interaction terms were created by multiplying each of the two determinants by each moderator (Attitude  $\times$  age, SN  $\times$  age, and PBC  $\times$  age, Attitude  $\times$  gender, SN  $\times$  gender, and PBC  $\times$  gender).

In order to reduce the multicollinearity associated with the use of the interaction terms, the independent variables were centred before having created the interaction terms (Aiken & West, 1991). Next, we performed a set of 3-step hierarchical regression analysis. While the direct impact of the three determinants (IV) on the DV was assessed during the first step, the moderator was inserted during the second step with the aim of appraising if the moderator exerted a significant direct influence on the DV.

Lastly, in the third step, the interaction terms were entered to assess the additional variance explained. If it is intended to experience the moderator effect, a significant  $R^2$  rise having a significant F-change value has to be discerned during the third step. Here, a moderator effect will appear in case the interaction term explicates a statistically significant value of variance in the DV (Bennett, 2000).

Once it is intended to assess the association between a series of IVs and DVs, it is appropriate to employ the hierarchical regression (Hair et al., 2006) which was suitable in this study for testing the moderating effects of the three variables on the relationships between the attitude, subjective norm, and Perceived Behavioural Control and behavioural intention.

Research question which was established in the current research is:

***Do age, and gender moderate the relationships between the proposed determinants of behavioural intention (Attitude, Subjective Norm and Perceived Behavioural Control) and behavioural intention to adopt e-learning?***

To answer this question, two hypotheses were postulated:

*H1: Age t moderate the effect of the three determinants of intention (attitude, SN and PBC) on BI to adopt e-learning by the students in the Jordanian universities.*

*H2: Gender moderate the effect of the three determinants of intention (attitude, SN and PBC) on BI to adopt e-learning by the students in the Jordanian universities.*

Table 2 and 3 show the moderating effects of age and gender on the Relationship between (Attitude, Subjective Norm and Perceived Behavioural Control) and behavioural intention to adopt e-learning.

**Table 2: The Moderating Effect of the age on the Relationship between (Attitude, Subjective Norm and Perceived Behavioural Control) and behavioural intention to adopt e-learning**

Dependent Variable	Independent Variables	Std Beta Step 1	Std Beta Step 2	Std Beta Step 3
<b>behavioural intention</b>	Attitude	.104	.106	.292
	Subjective norm	.482	.473	.383
	Perceived Behavioural Control	-.091	-.091	.063
<b>Moderating</b>				
	Age		.060	.655
<b>Interaction Terms</b>				
	attitude X Age			-.380
	Subjective norm X Age			.184
	Perceived Behavioural Control X Age			-.455
	$R^2$	.32	.33	.34
	$R^2$ Change	.32	.004	.009
	F Change	51.807	2.052	1.368
	Sig. F change	.000	.153	.253

**Note:** Significant levels: \*\*\* $p < .00$ ; \*\* $p < .01$ ; \* $p < .05$

(Step 1 refers to the regression with the attitude, subjective norm and Perceived Behavioural Control; Step 2

refers to the regression with the attitude, subjective norm and Perceived Behavioural Control; and the moderator (gender), whilst **step 3** refers to the regression with the attitude, subjective norm and Perceived Behavioural Control; the moderator and the interaction terms)

To test the moderating effects of the age on the relationship between the determinants of intention for the students, hierarchical multiple regression was run. As shown in Table 2,  $\Delta R^2$  was found to be significant for the interaction terms ( $\Delta R^2 = .009$ ,  $F = 1.368$ ,  $p < .01$ ) indicating that age has moderating effects. The  $R^2$  change and the F-change were significant from step 1 to 2 and from step 2 to 3 with the introduction of the interaction terms indicating that the age significantly influences the impact of the attitude, SN, and PBC on behaviour intention. According to the observed findings for the interaction effect, the interaction term between the attitude and age (attitude X age) was significant ( $\beta = -.380$ ) in the same direction as hypothesized, and the interaction term between subjective norm and age (Subjective norm X age) was significant ( $\beta = .184$ ) in the same direction as hypothesized, and the results indicated that the interaction term between the Perceived Behavioural Control and age (Perceived Behavioural Control X age) was found to be statistically significant ( $\beta = -.455$ ) in the direction that had been hypothesized. The conclusion drawn was that the age fails to moderate the relationship between (the attitude, SN, and PBC) and behaviour intention. Nevertheless, the results provided a support about the moderating effect of age on the relationship between (attitude, SN, and PBC) and behaviour intention. Hence, hypothesis H1 could not be accepted

**Table 3: The Moderating Effect of the gender on the Relationship Between attitude, subjective norm and Perceived Behavioural Control and behavioural intention to adopt e-learning by the students**

Dependent Variable	Independent Variables	Std Beta Step 1	Std Beta Step 2	Std Beta Step 3
<b>behavioural intention</b>	Attitude	.104	.105	-.184
	Subjective norm	.482	.48	.439
	Perceived Behavioural Control	-.091	-.092	-.158
	<b>Moderating</b>			
	Gender		-.006	-.569
	<b>Interaction Terms</b>			
	attitude X Gender			.515
	Subjective norm X Gender			.04
	Perceived Behavioural Control X Gender			.15
	$R^2$	.328	.328	.34
	$R^2$ Change	.328	.000	.001
	F Change	51.807	.019	1.781
	Sig. F change	.00	.89	.151

**Note:** Significant levels: \*\*\* $p < .00$ ; \*\* $p < .01$ ; \* $p < .05$

(**Step 1** refers to the regression with the attitude, subjective norm and Perceived Behavioural Control; **Step 2** refers to the regression with the attitude, subjective norm and Perceived Behavioural Control; and the moderator (age), whilst **step 3** refers to the regression with the attitude, subjective norm and Perceived Behavioural Control; the moderator and the interaction terms)

To assess the moderating role of the students' gender on the effects of attitudes, SN and, PBC on BI, a three-step hierarchical regression analysis was also conducted. Table 3 displays that  $\Delta R^2$  was significant for the interaction term ( $\Delta R^2 = .001$ ,  $F = 1.781$ ,  $p \leq .001$ ) indicating that the gender has moderating effects. The  $R^2$  change and the F-change were also significant from step 1 to 2 and from step 2 to 3 with the introduction of the interaction terms implying that the gender significantly influences the impact of the attitude, SN, and PBC on behaviour intention.

For the interaction effect, the results indicated that the interaction term between attitude and gender (attitude X gender) was significant ( $\beta = .515$ ) in the same direction as hypothesized, and the interaction term between subjective norm and gender (Subjective norm X gender) was significant ( $\beta = .04$ ) in the same direction as hypothesized, and the results indicated that the interaction term between Perceived Behavioural Control and gender (Perceived Behavioural Control X gender) was detected to be statistically significant ( $\beta = .15$ ) in the direction that had been hypothesized. Therefore, it can be concluded that gender does moderate the relationship between (the attitude, SN, and PBC) on behaviour intention. Nevertheless, the results provided a support about the moderating effect of gender on the relationship between (the attitude, SN, and PBC) and behaviour intention. Consequently, hypothesis H2 could be accepted.

#### 4. Implications

Investigating the possible role of moderators offers information on the "boundary conditions for the relationships

of interest” (Aguinis, 2004, p. 4). The findings of this study imply that differences exist in the partial impact of the determinants of intention. Such differences are said to be dependent on some factors like age, and gender. It is essentially vital to specify the moderating effects of such variables for adopting suitable measures with the aim of excelling the adoption among diverse sectors of students. Having identified the mentioned differences, alternate approaches can be offered with the aim of efficiently handling both the development and application of e-learning.

The findings have shown that the gender moderates the links between intention to adopt e-learning and the perceived control over adopting it. Women showed a weaker relationship between their intentions and controls. Thus, there is an urge to address the issue of the gender gap in the use of technology which is probably still evident, at least in the Middle Eastern countries such as Jordan (Al-alak & Alnawas, 2011). Efforts should be directed on narrowing this gap by improving the women’s control over adopting e-learning. This can be accomplished by boosting their self-confidence in using the internet, offering training, and support.

### 5. limitations of the Study

This study suffers from various limitations that have to be borne in mind once it is intended to interpret the obtained results. The main limitation is its reliance on self-report measures as the main source for gathering data. Self-report measures may be biased by social desirability. That is to say, the respondents would give responses which might be socially pleasing instead of accurately reflecting their thoughts, beliefs, or actions (Nancarrow & Brace, 2000). Because of this, there is a possibility for the validity and reliability of the measurement to be biased and later bias the inferred conclusions. Nevertheless, as pointed out by Armitage and Conner (2001), this method is common in research adopting behavioural decision-making models such as TRA and TPB. In addition, Ajzen (1985) and Hartwick and Barki (1994) maintain that just as objective methods, self-report measures are equally valid because they are more comprehensive, that is, when subjects respond to them, they tend to consider various contexts. On the other hand, objective measures are usually limited in scope, “with the assessment made only in certain contexts or at certain times” (Hartwick & Barki, 1994, p. 460). However, the participants in the current research were not requested to divulge their names and this was for the purpose of minimizing the impact of social desirability. Another limitation is recruiting a cross-sectional research design for assessing the perceptions on the subject of a rapidly growing technology. Indeed, the current research tended to assess the perceptions and intentions with reference to e-learning only at a single point in time. All the same, it is agreed that such perceptions might endure alterations within eras while the people would obtain more experiences and there will be an enhancement in the system as well.

Another limitation of this study is that its scope is confined to three public and three private universities in Jordan, a geographical area that is different in terms of its population and some cultural aspects from the other more homogeneous and conservative areas in the country. Therefore, the results may not be generalised to the population of Jordan University students.

### 6. Conclusion

This study focused on the moderating effect of the gender on the relationship between attitude, subjective norm and perceived behavioural control and behavioural intention to adopt e-learning by the students in three public and three private Jordanian universities. The outcomes demonstrated that students’ gender plays a moderating role in adoption to e-learning but age not, in Jordan need to increase the level of their technological skills to significantly benefit from the opportunities offered by e-learning. Considerable preparatory support is required to ensure that students feel adequately and appropriately supported in their learning processes.

Further studies could be undertaken to explore the strategic and operational opportunities focusing on technological readiness, and skills.

In order to enhance e-learning adoption intention and in turn acceptance among students in Jordanian universities, interested parties to this learning arrangement must try to build favourable attitude through enhanced usefulness and ease of use perceptions. Subjective norm should be enhanced normative beliefs, and Perceived behavioural control should also be improved, specifically by enhancing university support, Internet Self-efficacy, and Perceived Accessibility.

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